

REMARKS

Claims 1-6, 9-16 and 18-29 are now presented for examination. Claims 7, 8 and 17 have been canceled without prejudice and without disclaimer of subject matter. Claims 1, 18 and 19 have been amended. Claims 21-29 have been added as new claims. No new matter has been added. Claims 1, 18, 19 and 23 are independent.

On page 2 of the Office Action, Claims 7 and 8 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 7 and 8 have been canceled.

On page 2 of the Office Action, Claims 1, 3, 6, 8, 9, 11, 13 and 18 were rejected under 35 U.S.C. §102(b) as being anticipated by Lazzara et al. (U.S. Patent No. 5,022,860). Lazzara discloses an ultra-slim dental implant fixture that includes a tapered shaft with external screw-like threads wound about the exterior of the shaft. FIG. 3 shows a lead thread 32 coiled around the shaft 34 with turns extending from the gingival end 36 of the shaft to the tapered apical end 38.

Claim 1, as amended, now recites a fixation device with a threaded portion that includes “at least one transverse slot resulting in separate thread segments whereby the outer face of the shaft is exposed between adjacent thread segments”. The support for this can be found in paragraph 19 of Applicant’s specification as well as in FIGS. 2 and 4 of the drawings. Lazzara does not disclose or suggest one or more transverse slots that separate the threaded portion of the fixation device into threaded segments to expose the outer face of the shaft between adjacent thread segments. The device disclosed in Lazzara is a continuous screw-like thread that is wound around the shaft in turns, without a slot to separate the thread. Including one or more

slots within the threaded portion 18 provides additional shaft surface area between the fixation device and the patient's tissue to provide a path for blood and tissue matter to escape during the insertion and healing periods.

In sum, Lazzara does not teach or suggest Applicant's invention as recited in amended independent Claim 1 because Lazzara does not disclose a transverse slot that separates the threaded portion of the fixation device in order to expose additional surface area of the shaft. Accordingly, Applicant respectfully asserts that amended Claim 1 is patentable and accordingly requests the withdrawal of the rejection of this claim. Because amended Claim 18 contains the same limitation as described above with respect to Claim 1, Applicant respectfully asserts that amended Claim 18 is also patentable and accordingly requests the withdrawal of the rejection of this claim.

Applicant notes that Claims 3, 6, 9, 11 and 13 depend either directly or indirectly from amended independent Claim 1. Claim 1 is believed to be patentable based on the arguments presented above. Claims 3, 6, 9, 11 and 13 are believed patentable by virtue of their dependency from patentable independent Claim 1. As such, Applicant respectfully requests the withdrawal of the rejection of these claims.

On page 3 of the Office Action, Claims 1, 2, 4-6, 11 and 18 were rejected under 35 U.S.C. §102(e) as being anticipated by Hansson (U.S. Patent No. 6,036,941). Hansson discloses a screw-shaped dental implant having a screw-like thread wound about its shaft. Hansson describes the dimensions of a thread flank and its apex yet fails to describe or suggest the use of a transverse slot to separate the thread-like projections into thread segments in order to expose additional portions of the shaft between adjacent thread segments, as now recited in amended

Claims 1 and 18. Further, Hansson does not include a threaded portion having a third face (see rounded top portion of thread in FIG. 1)

Hansson therefore does not teach or suggest Applicant's invention as recited in amended independent Claims 1 and 18 because Hansson does not disclose a transverse slot that separates the threaded portion of the fixation device in order to expose additional surface area of the shaft. Accordingly, Applicant respectfully asserts that amended Claims 1 and 18 are patentable and accordingly requests the withdrawal of the rejection of this claim. Claims 2, 4-6 and 11 are believed patentable by virtue of their dependency from patentable independent Claim 1. As such, Applicant respectfully requests the withdrawal of the rejection of these claims.

On page 3 of the Office Action, Claims 1, 3, 6-8, 11 and 18 were rejected under 35 U.S.C. §102(b) as being anticipated by Sandhaus (U.S. Patent No. 4,466,796). Sandhaus discloses a dental implant device having continuous, circular threads 5 wound about a cylindrical central portion 3. Sandhaus does not disclose or suggest one or more transverse slots disposed between the thread. In FIGS. 1 and 4, threads 5 are shown to wind completely around central portion 3 without any breaks. Central portion 3 is exposed only between successive thread turns (FIGS. 1 and 4) and not between each thread. The threads do not include a slot that would expose additional area of the shaft between adjacent thread segments.

Sandhaus therefore does not teach or suggest Applicant's invention as recited in amended independent Claims 1 and 18 because Sandhaus does not disclose one or more transverse slots that separate the threaded portion of the fixation device in order to expose additional surface area of the shaft. Accordingly, Applicant respectfully asserts that amended Claims 1 and 18 are patentable and accordingly requests the withdrawal of the rejection of this claim. Claims 3, 6

and 11 are believed patentable by virtue of their dependency from patentable independent Claim

1. As such, Applicant respectfully requests the withdrawal of the rejection of these claims.

On page 3 of the Office Action, Claims 1, 3, 17 and 18 were rejected under 35 U.S.C. §102(e) as being anticipated by Ura (U.S. Patent No. 6,234,797). Ura discloses a dental implant device having an external thread configuration. Applicant respectfully disagrees with the Examiner's assertion that Ura includes "a transverse slot 32 along at least a portion of the threaded portion" as recited in page 4 of the Office Action.

In Ura, FIG. 4 shows a dental implant device having continuous helical threads 35 and 36 wound around main portion 26. The distal end 29 of main portion 26 includes a plurality of cutting edges 32 to provide self-tapping capabilities (col. 5, lines 31-36). Further, in FIG. 4, it is clear that cutting edges 32 are not a part of the helical threads 35 and 36, are not "a transverse slot that results in separate thread segments" and do not "expose the shaft between adjacent thread segments", all of which is now required by the language of amended Claims 1 and 18. Finally, in FIG. 6, an elevational bottom view of the distal end of the device, cutting edges 32 can be seen. From FIG. 6, it is clear that cutting edges 32 are located *within* the periphery of the main portion and therefore cannot represent breaks in the threads, which are externally disposed on the outer face of the main shaft.

Therefore, Ura does not teach or suggest Applicant's invention as recited in amended independent Claims 1 and 18 because Ura does disclose a transverse slot which separates the threaded portion of the fixation device in order to expose additional surface area of the shaft between adjacent thread segments. Accordingly, Applicant respectfully asserts that amended Claims 1 and 18 are patentable and accordingly requests the withdrawal of the rejection of this

claim. Claim 3 is believed patentable by virtue of its dependency from patentable independent Claim 1. As such, Applicant respectfully requests the withdrawal of the rejection of this claim.

On page 4 of the Office Action, Claims 19 and 20 were rejected under 35 U.S.C. §102(b) as being anticipated by Niznick (U.S. Patent No. 5,061,181). Niznick discloses a dental implant device having circumferential projections 33-39 (FIG. 2) and threads 46-47 (FIG. 2) wound around the external portion of body portion 11. In the embodiment shown in FIG. 1, flute 16 and projections 15 extend outwardly from body portion 11.

Claim 19 requires that the fin sections disposed along at least a portion of the length of the outer face have “a diameter greater than the diameter of the outer face at the disposed location”. Clearly, in the embodiment shown in FIG. 1 of Niznick, the diameter between the projections (flute 16 and projections 15) is greater than the diameter of the projections themselves. In the alternate embodiment of FIG. 2, projections 33-39 are continuous around the outer face of body portion 11. Niznick does not disclose “at least one transverse slot resulting in separate thread segments whereby the outer face of the shaft is exposed between adjacent thread segments” as now recited in amended Claim 19.

Therefore Niznick does not teach or suggest Applicant’s invention as recited in amended independent Claim 19 because in one embodiment, Niznick does not teach or suggest the use of projections where the diameter of the projections is greater than the diameter of the outer face at the disposed location, and, in an alternate embodiment, Niznick does not teach or suggest the use of a transverse slot which separates the threaded portion of the fixation device in order to expose additional surface area of the shaft. Accordingly, Applicant respectfully asserts that amended Claims 19 is patentable and accordingly requests the withdrawal of the rejection of this claim.

Claim 20 is believed patentable by virtue of its dependency from patentable independent Claim 19. As such, Applicant respectfully requests the withdrawal of the rejection of this claim.

On page 4 of the Office Action, Claims 10, 12, 14 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lazzara in view of Grell et al. (U.S. Patent No. 4,177,524). In light of the above arguments, Claims 10, 12, 14 and 16 are believed patentable by virtue of their dependency from patentable independent Claim 1. As such, Applicant respectfully requests the withdrawal of the rejection of these claims.

On page 4 of the Office Action, Claim 15 was rejected under 35 U.S.C. §103(a) as being unpatentable over Lazzara. In light of the above arguments, Claim 15 is believed patentable by virtue of its dependency from patentable independent Claim 1. As such, Applicant respectfully requests the withdrawal of the rejection of this claim.

New claims 21-28 provide additional features not disclosed or suggested in the cited art. Claim 21 depends indirectly from independent Claim 1 and provides that the second face of the threaded portion (28) be flat and substantially perpendicular to the third face (30) of the threaded portion. The relationship between the second face and third face provides improved shear force resistance over the cited references. Hansson (FIG. 1) and Lazzara et al. (FIG. 3A) describe an angled "second face". The support for this claim can be found in the figures and in paragraph 23, line 4, and paragraph 30, line 3 of the specification.

New Claim 22 is indirectly dependent from independent Claim 1 and provides that the second face (28) be substantially perpendicular with the outer face (24) of shaft (16). Hansson, Lazzara et al. and Sandhaus each disclose threaded portions having a second face that is angled and not perpendicular with the outer face of the shaft. Support for this claim can be found in FIGS. 3 and 5. New independent Claim 23 incorporates each of the features described above.

The advantage provided by the perpendicular relationship between the second face and the third face of the threaded portion, and the second face and the outer face of the shaft, which is not provided by the “angled” configuration of the cited art, is that the shear forces are minimized.

New Claim 24 depends from new independent Claim 23 and defines the downward sloping first face (26) and its relationship to outer face (24). Claim 24 recites a fixation device where the angle formed by the plane of the outer face and the plane of the first face is between substantially 95 degrees and substantially 140 degrees. Support for this claim can be found in the drawing figures and in paragraph 23, lines 7-10 of the specification.

New Claim 25 depends from new independent Claim 23 and describes the helical groove (20) being substantially flat. Ura (FIGS. 5 and 14) and Sandhaus (FIGS. 1 and 3) disclose a shaft having a groove that is not uniform, includes elliptical ridges and is not substantially flat. FIGS. 1, 3 and 5 of Applicant’s application illustrates the flat surface of the helical groove.

New Claim 26 depends from new independent Claim 23 and defines the downward sloping first face (26) and its relationship to helical groove (20). Claim 26 recites a fixation device where the angle formed by the plane of the helical groove and the plane of the first face is between substantially 95 degrees and substantially 140 degrees.

New Claim 27 depends from new independent Claim 23 and describes the curved contact between the second end portion (34) of the first face (26) and the third face (30). Ura (FIG. 5), Sandhaus (FIG. 3) and Lazzara et al. (FIG. 3A) all disclose a sharp edge between the first face and the third face of the thread. Support for this claim can be found in paragraph 26, lines 5-7.

New Claim 28 depends from new independent Claim 23 and describes the curved contact between the fourth end portion (38) of the second face (28) with the third face (30). Ura (FIG.

5), Sandhaus (FIG. 3) and Lazzara et al. (FIG. 3A) all disclose a sharp edge between the second face and the third face of the thread. Support for this claim can be found in paragraph 27, line 1.

Applicant thanks the Examiner for pointing out the typographical error in Claim 19. The word "other" has been replaced by "outer" in line 3 of the claim.

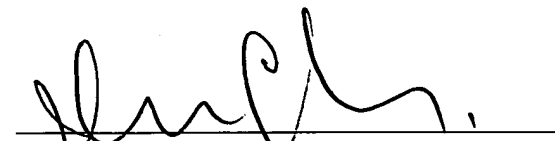
Regarding the Information Disclosure Statement filed July 10, 2002, the undersigned faxed copies of the previously omitted references and discussed these references with the Examiner in a September 8, 2003 telephonic interview. In the Interview Summary, the Examiner has indicated receipt of the faxed copies and has stated that the 1449 form will be signed off in the next Office Action.

For all of the above reasons, the claim objections are believed to have been overcome placing Claims 1-6, 9-16 and 18-29 in condition for allowance, and reconsideration and allowance thereof is respectfully requested.

The Examiner is encouraged to telephone the undersigned to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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